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09/991,720	11/13/2001	Daniel J. Huslig	LITTLE1200	5565

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EXAMINER

NGUYEN, TU X

ART UNIT	PAPER NUMBER
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2684

DATE MAILED: 06/09/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/991,720

Applicant(s)

HUSLIG, DANIEL J.

Examiner

Tu X Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-3, 5-8, 10-17, 19-21 and 23-31, are rejected under 35 U.S.C. 102(e) as being anticipate by Durrant et al. (US Patent 6,501,955).

Regarding claims 1 and 30, Durrant et al. disclose a method comprising:

receiving, at a coverage frequency (see col.4 lines 11-14), a coverage signal having a coverage signal upper-sideband and a coverage signal lower-sideband (see col.6 lines 34-44,);

forming a link signal at a link frequency, the link signal comprising a link signal upper-sideband corresponding to the coverage signal lower-sideband and a link signal lower-sideband corresponding to the coverage signal upper-sideband (see col.6 lines 26-44, “+/-300 Hz shifts” reads on “upper-sideband corresponding lower-sideband” and vice versa).

Regarding claim 6, Durrant et al. disclose method of forming a link signal at a link frequency from a coverage signal at a coverage frequency, the coverage signal comprising a coverage signal lower-sideband and a coverage signal upper-sideband (see col.6 lines 26-44), the method comprising:

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inverting the coverage signal lower-sideband and the coverage signal upper-sideband to form the link signal comprising a link signal upper-sideband corresponding to the coverage signal lower-sideband and a link signal lower-sideband corresponding to the coverage signal upper-sideband (see col.6 lines 26-44, "shift, translate" reads on "inverting").

Regarding claim 11, Durrant et al. disclose method comprising:

receiving a coverage signal at coverage frequency, the coverage signal comprising a coverage signal lower-sideband and a coverage signal upper-sideband (see col.6 lines 34-44);

inverting a coverage signal lower-sideband and the coverage signal upper-sideband to form a link signal at a link frequency, the link signal comprising a link signal upper-sideband corresponding to the coverage signal lower-sideband and a link signal lower-sideband corresponding to the coverage signal upper-sideband (see col.6 lines 26-44); and

transmitting the link signal (see col.5 lines 10-12).

Regarding claim 16, Durrant et al. disclose a method comprising:

receiving an upstream coverage signal at an upstream coverage frequency through a wireless coverage channel from one or more mobile stations, the upstream coverage signal comprising a coverage signal upper-sideband and a coverage signal lower-sideband (see col.6 lines 26-44, mobile units shift signals in 200KHZ steps which includes upper-sideband and lower-sideband);

frequency shifting the upstream coverage signal from the upstream coverage frequency to the an upstream link frequency to invert the upstream coverage signal lower-sideband and the upstream coverage signal upper-sideband to form an upstream link signal at an upstream link frequency, the upstream link signal comprising an upstream link signal upper-sideband corresponding to the upstream coverage signal lower-sideband and an upstream link signal lower-sideband corresponding to the upstream coverage signal upper-sideband; and transmitting the upstream link signal to a base station through a wireless link channel (see col.6 lines 26-44).

Regarding claim 20, Durrant et al. disclose everything as claim 16 above. More specifically, Durrant et al. disclose downstream link signal (see col.3 lines 1-10, repeater repeats signal transmitted between a mobile unit and a base station correspond to downstream link signal).

Regarding claim 24, Durrant et al. disclose everything as claim 16 above. More specifically, Durrant et al. disclose frequency mixing the downstream coverage signal (see 65, fig.3).

Regarding claim 25, Durrant et al. disclose everything as claim 16 above. More specifically, Durrant et al. disclose forming an intermediate frequency (it is inherent the receiver converts the RF signal to IF signal) signal having an intermediate frequency by frequency mixing the downstream coverage signal (see 65, fig.3).

Regarding claims 26 and 28, Durrant et al. disclose everything as claim 1 above. More specifically, Durrant et al. disclose a first interface and a second interface (see 22, 23 fig.3).

Regarding claim 29, Durrant et al. disclose everything as claim 1 above. More specifically, Durrant et al. disclose a first mixer and a second mixer (see 45, 56 fig.3).

Regarding claims 2, 10, 19, 23, Carney et al. disclose performing an odd number of high side injection mixing procedures to frequency shift the link coverage signal to the link frequency (see col.6 lines 35-44, +300HZ shifts correspond to odd number of high side).

Regarding claim 3, Durrant et al. disclose everything as claim 25 above. More specifically, Durrant et al. disclose mixing the coverage signal with a first mixing (see 45, fig.3) signal to form an intermediate frequency (IF) signal; and

mixing the IF signal with a second mixing (see 30, fig.3) signal to form the link signal.

Regarding claim 5, Durrant et al. disclose the first mixing signal has a first mixing frequency greater than the coverage frequency (see col.5 lines 36-50, +300HZ greater than coverage frequency); and

the second mixing signal has a second mixing frequency less than the link frequency (see col.5 lines 36-50, -300HZ less than link frequency).

Regarding claim 7, Durrant et al. disclose the inverting comprises: frequency shifting the coverage signal from the coverage frequency to the link frequency (see col.6 lines 26-44).

Regarding claims 12 and 14, Durrant et al. disclose receiving a downstream coverage signal from a cellular base station (see col.3 lines 1-10).

Regarding claims 13 and 15, Durrant et al. disclose transmitting a downstream link signal through a wireless link channel to a distribution station configured to transmit a corresponding coverage signal to a mobile station (see col.3 lines 1-10).

Regarding dependent claims 8 and 17, Durrant et al. disclose "frequency mixing the intermediate frequency signal with a second mixing signal at a second mixing frequency greater than the link frequency if the first mixing frequency is less than coverage frequency and less than the link frequency if the first mixing frequency is greater than the coverage frequency" (see col.5 lines 35-50).

Regarding claim 21, Durrant et al. disclose frequency mixing the downstream link signal with a third mixing signal at a third mixing frequency to form another intermediate frequency signal at the intermediate frequency; frequency mixing the another intermediate frequency signal with a fourth mixing signal at a fourth mixing frequency greater than the downstream link frequency if the third mixing frequency is less than the downstream link frequency and less than the downstream coverage frequency if the third mixing frequency is greater than the downstream link frequency (see col.5 lines 10-50, downlink frequency from base station to the repeater corresponds to third mixing frequency and downlink from the repeater to mobile station corresponds to fourth mixing frequency).

Regarding dependent claims 27, Durrant et al. disclose "frequency mixing the intermediate frequency signal with a second mixing signal at a second mixing frequency less than the link frequency if the first mixing frequency is greater than coverage

frequency and greater than the link frequency if the second mixing frequency is less than the coverage frequency" (see col.5 lines 35-50).

Regarding claim 31, Durrant et al. disclose the link signal comprises a frequency modulated carrier signal having a link frequency, the upper-sideband spectrally located above the link frequency and the lower-sideband spectrally located below the link frequency (see col.5 lines 10-51).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4, 9, 18 and 22, are rejected under 35 U.S.C. 103(a) as being unpatentable over Durrant et al. in view of Carney et al. (US Patent 5,970,410).

Regarding claim 4, Durrant disclose a first mixing frequency greater than the coverage frequency (see col.5 lines 35-50). However, Durrant et al. fail to disclose a second mixing frequency less than the link frequency.

Carney et al. disclose a second mixing frequency less than the link frequency (see col.6 lines 25-45). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Durrant et al. with the above teaching of Carney et al. in order to provide space apart higher downlink frequency compare to lower uplink frequency.



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Regarding claims 9, 18 and 22, Durrant et al. fail to disclose frequency shifting further comprises filtering the intermediate frequency signal.

Carney et al. disclose frequency shifting further comprises filtering the intermediate frequency signal (see col.8 lines 1-19). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Durrant et al. with the above teaching of Carney et al. in order to provide filter IF from RF signal.

### Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tu Nguyen whose telephone number is (703) 305-3427. The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MAUNG NAY A, can be reached at (703) 308-7749.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center 2600 Customer Service Office at (703) 306-0377.


**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 872-9314 (Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

  
April 19, 2004

  
NAY MAUNG  
SUPERVISORY PATENT EXAMINER